LBNL 51789 Abs. Beam Dynamics in a Storage Ring for Neutral (Polar) Molecules

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The force from a non-uniform electric field on the electric dipole moment of a molecule may be used to circulate and focus molecules in a storage ring. The nature of the forces from multipole electrodes for bending and focusing are described for strong-field-seeking and for weak-field-seeking molecules. Fringe-field forces are analyzed. Examples of storage ring designs are presented; these include long straight sections and provide bunching and acceleration.